WSR-88D Level II
Electronic Central Collection
Architecture Design

18 June 2003

Agenda

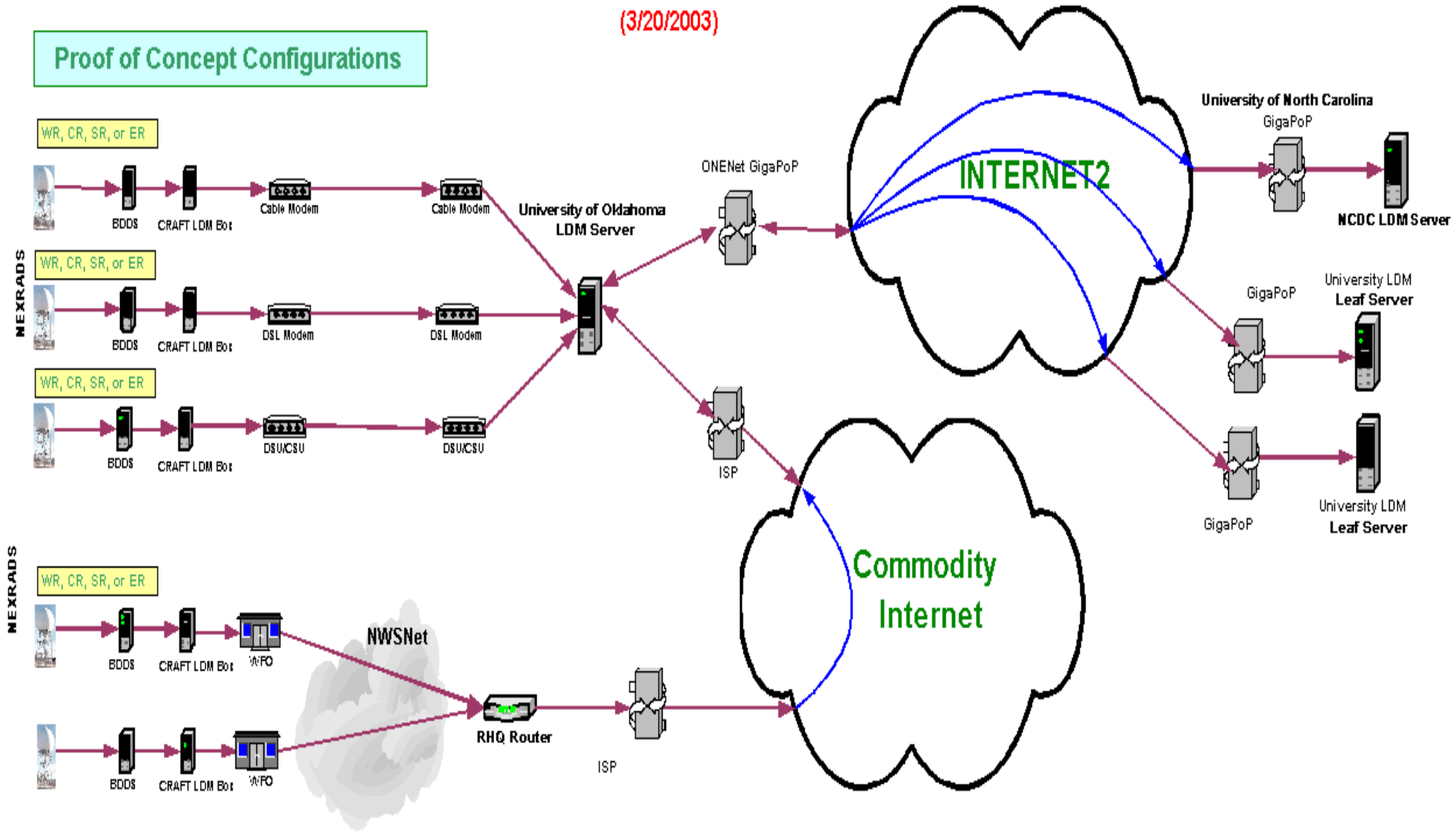
- **Level II Requirements**
- **Network Design**
- **Schedule**
- **Latency**
- **Summary**

NWS Level II Requirements

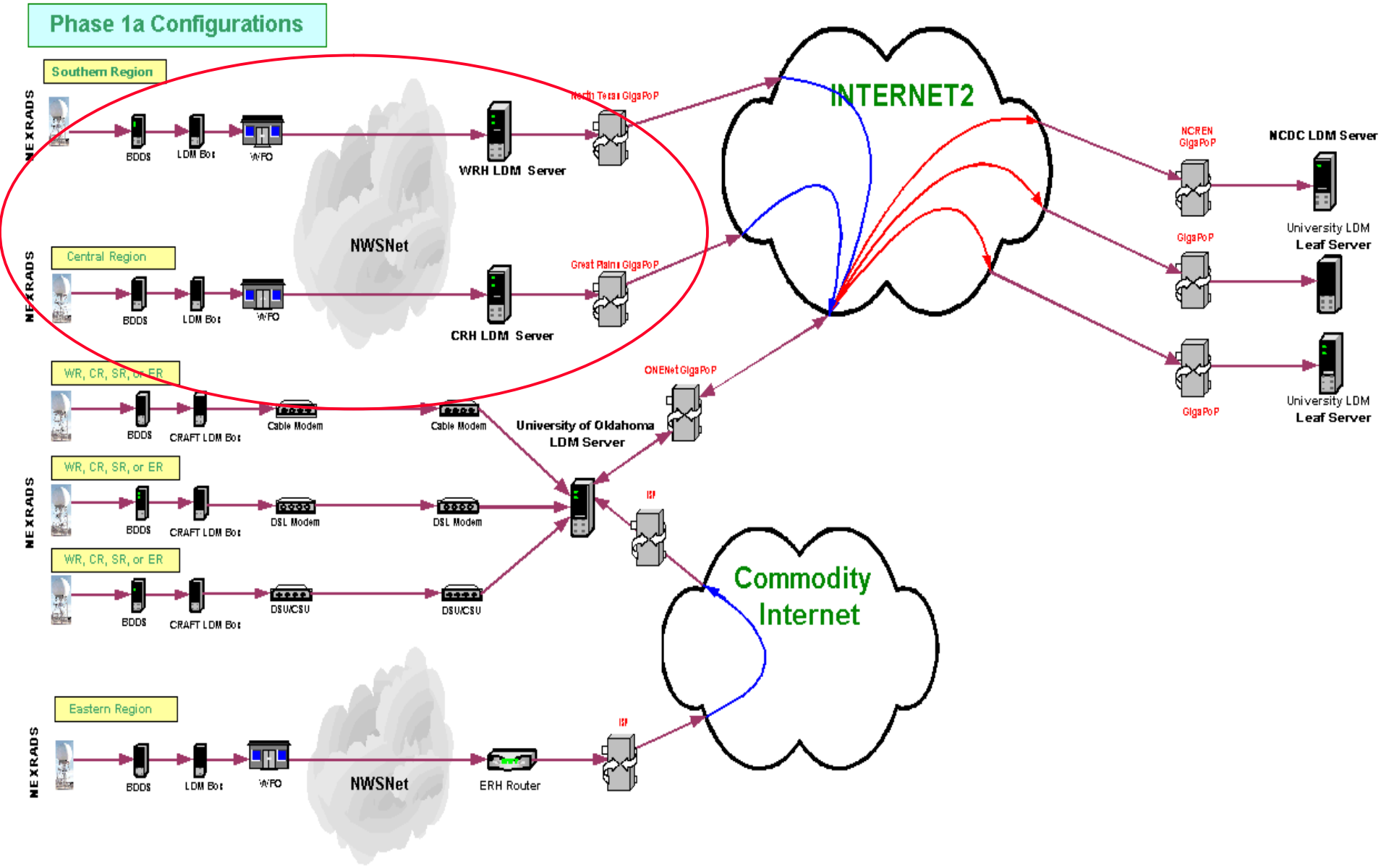
- **WSR-88D Archive Level II data is base data, status information, and metadata, which includes:**
  - RDA performance/maintenance data, VCP data, clutter filter bypass map data, notch-width map data, and RDA adaptation data.
- **ORD requirement to send Level II data to NCDC for archive.**
- **ORD requirement for near real-time Level II data delivery to NCEP.**
  - 95% availability.
  - One minute latency.

Level II Radar Distribution
CRAFT Proof of Concept
LDM Architecture

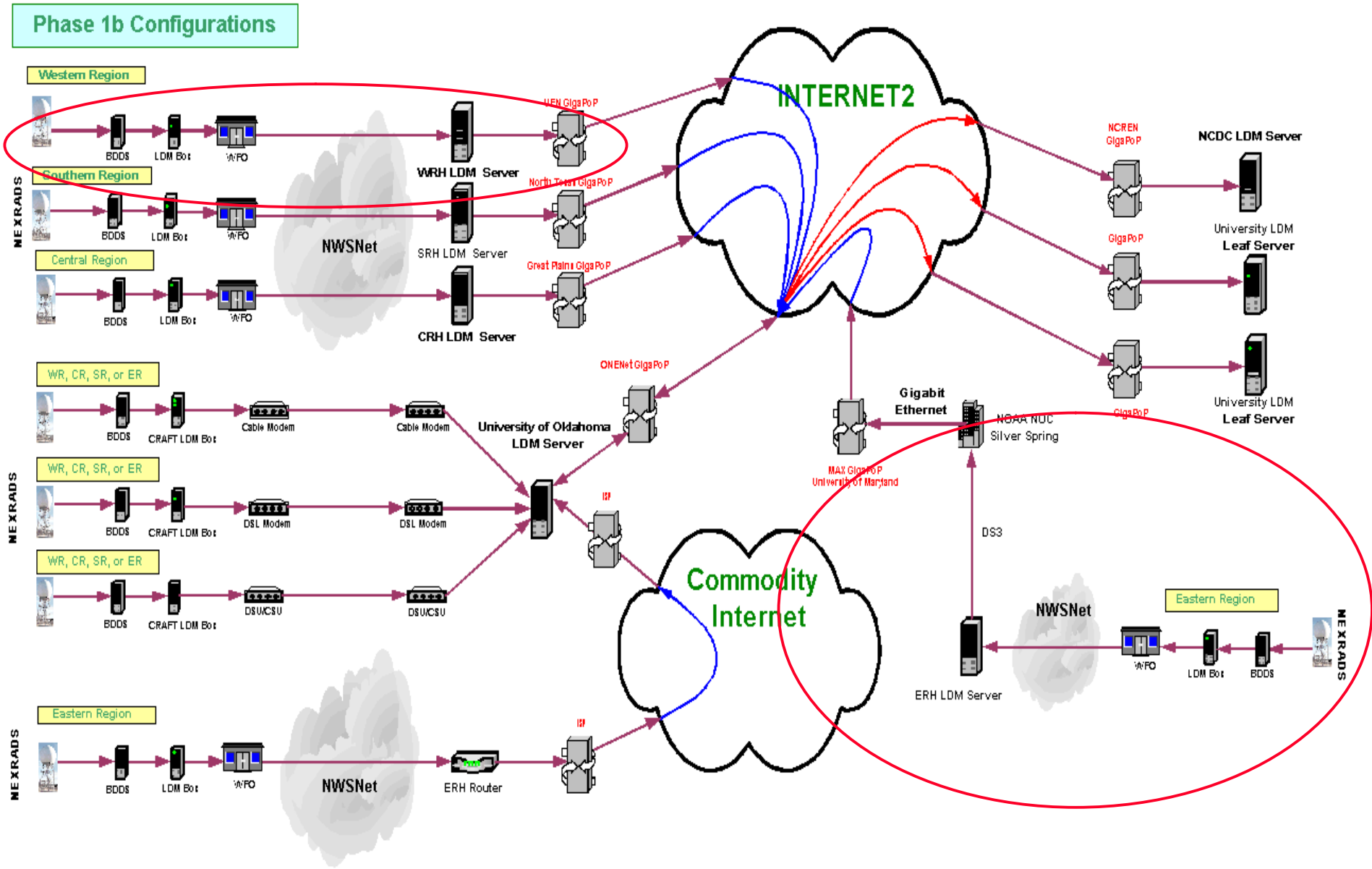
(3/20/2003)



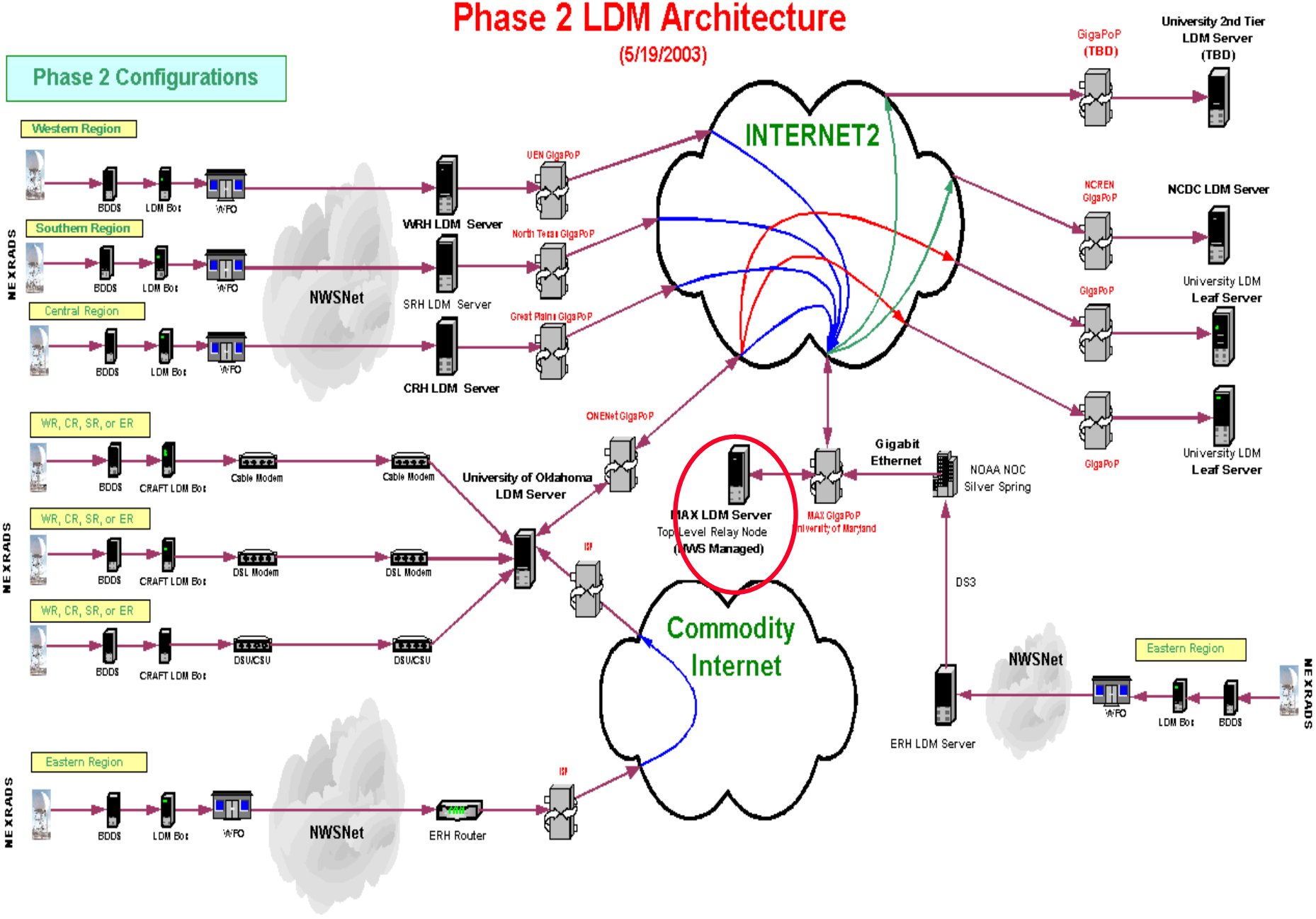
Level II Radar Distribution
Phase 1a LDM Architecture
(5/19/2003)



Level II Radar Distribution
Phase 1b LDM Architecture
(5/19/2003)



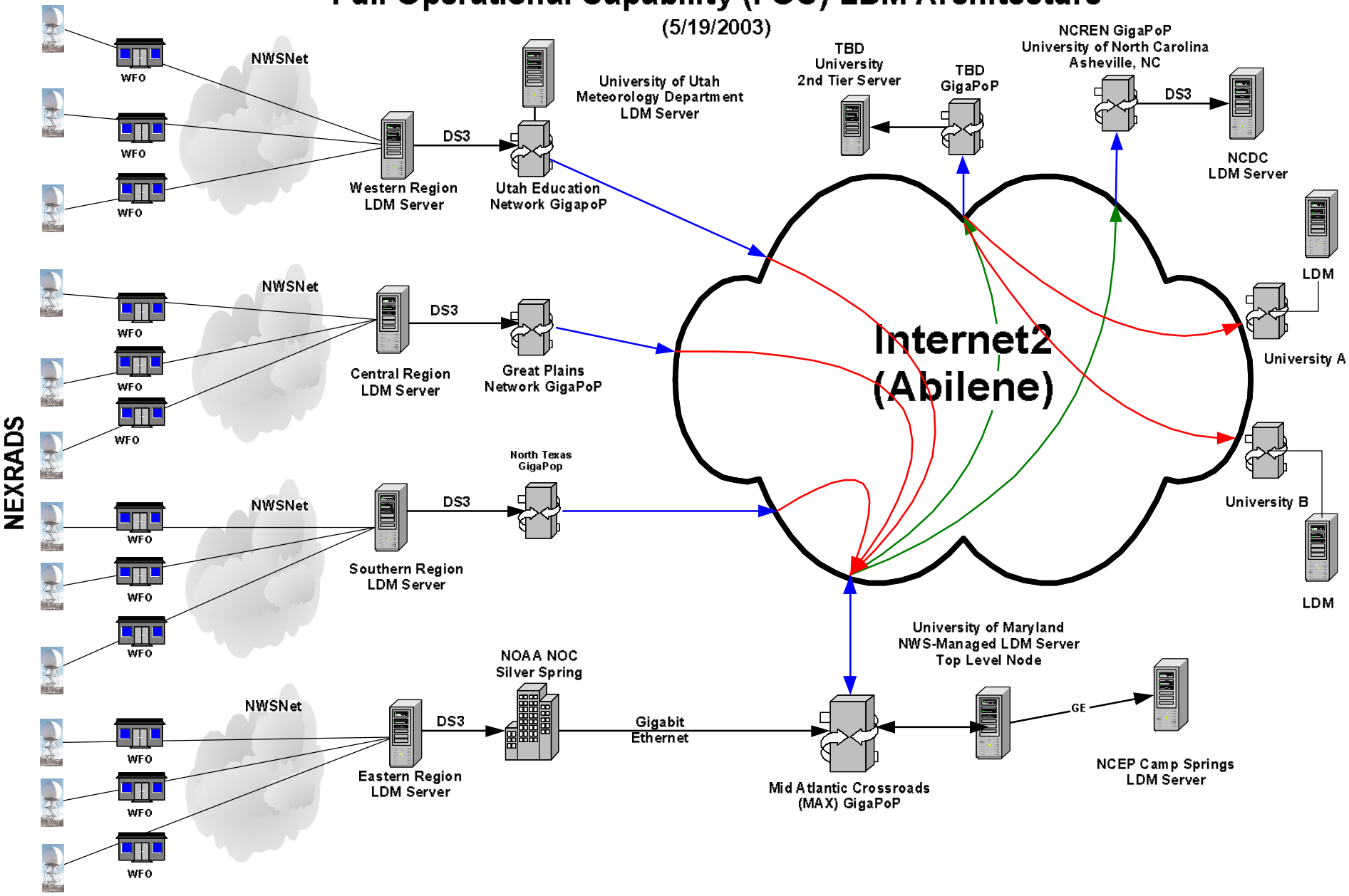
Level II Radar Distribution
Phase 2 LDM Architecture
(5/19/2003)



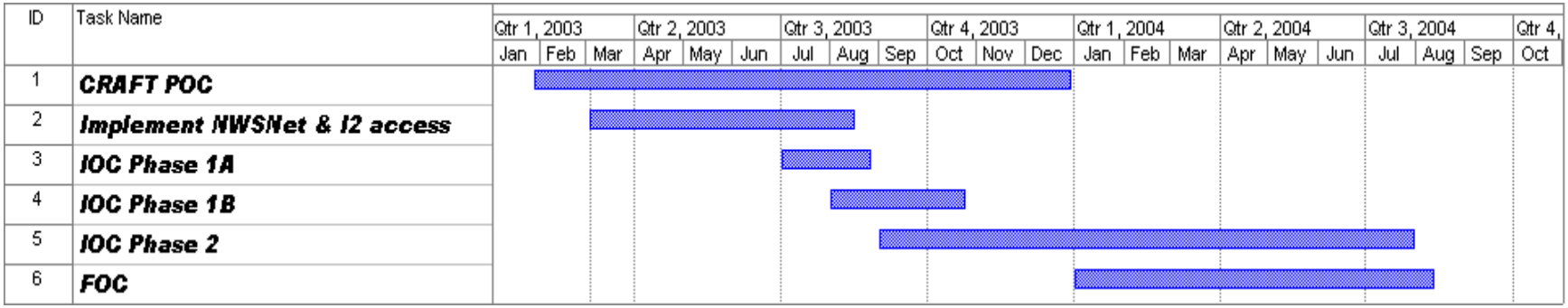
Level II Radar Distribution

Full Operational Capability (FOC) LDM Architecture

(5/19/2003)



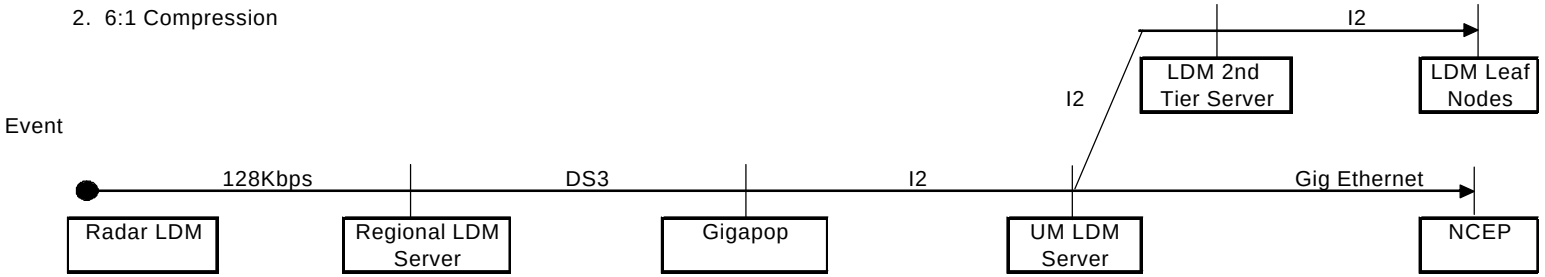
Nexrad Level II Central Collection/Distribution via NWSNet/Internet 2



	POC **CRAFT Proof Of Concept**	**IOC Phase 1A** **Keep OU/CAPS CRAFT sites, Use NWSNet/I2**	**IOC Phase 1B** **Verify NWSNet/ I2 before adding RHQ LDMs, min cost expansion**	**IOC Phase 2** **Verify RHQs & MD GigaPoP Distribution**	**FOC Phase 3** **Expand to metadata, add DoD sites, remove extra equipment**
# Radar Sites electronically sending data	**61 CRAFT Sites**	**61 CRAFT Sites**	**61 CRAFT Sites + ~ 60 NWS Sites**	**61 CRAFT Sites + ~ 60 NWS Sites**	**All CONUS ~ 129 sites with 8 new DoD sites**
# Radar Sites On NWSNet/I2	**0, some ER CRAFT sites using NWSNet**	**11 CRAFT sites move to NWSNet/I2**	**11 CRAFT + ~60 NWS LDM sites on NWSNet/I2**	**11 CRAFT + ~60 NWS LDM sites on NWSNet/I2**	**All CONUS ~ 129 sites with 8 new DoD sites**
Distribution Points to NCDC/NCEP	**OU distribution to NCDC**	**OU distribution to NCDC**	**OU distribution to NCDC**	**UM, OU, distribution to NCDC**	**UM distribution to NCDC and NCEP**
Data Type	**Base Data**	**Base Data**	**Base Data**	**Base Data**	**Level II data (base data & metadata)**
Compression & LDM	**LDM PC**	**LDM PC**	**LDM PC**	**LDM PC**	**ORPG BDDS integrated**
ORPG BDDS Access	**External & Agency**	**External & Agency Firewalled NWSNet**	**External & Agency Firewalled NWSNet**	**External & Agency Firewalled NWSNet**	**Trusted Agency & NWSNet**

Level II Latency Analysis

Assume: 1. Transmit 100 radials at a time
2. 6:1 Compression



DS3 =	45000000	Bits/sec
OC3 =	155000000	Bits/sec
Gig Ethernet	1000000000	Bits/sec
I2 > OC3		
Assume I2 = OC3	155000000	Bits/sec

Link Analysis

Package:	100	radials	
Size of Radial	2432	Bytes	
Data Package Size	243200	Bytes	
Post Compression (6:1)	40533.333	Bytes	
Number of packets	28		
Overhead per packet	156	Bytes	
Net Overhead	4368		11% of compressed package
Tx Package Size	359210.67	bits	

		Baseline	**ORPG Build 5**
New Science			4.1 min VCP (VCP 12)
Size Mult.		1	1.24
Tx Package Size		3.59E+05	4.45E+05
Latency			
Radar LDM - Region	128Kbps	2.8063	3.4799
LDM - Gig	DS3	0.0080	0.0099
Gig - UM	I2	0.0023	0.0029
UM - NCEP	Gig Ethernet	0.0004	0.0004
UM - 2nd Tier Server	I2	0.0023	0.0029
2nd Tier Server - Leaf Nodes	I2	0.0023	0.0029
Total Seconds to NCEP		2.82	3.49
Total Seconds to Leaf Nodes		2.82	3.50

Summary

- **The 1 minute latency and 95% availability requirements to NCEP, and the delivery requirements to NCDC have been addressed.**
- **The proposed architecture design using NWSNet and I2 is expected to meet the requirements.**
- **The Government is open to suggestions and discussions on how level II data may be fed to the public.**

End of presentation